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METHODOLOGICAL FOUNDATIONS OF USING THE CREDIT-MODULE SYSTEM IN TEACHING PHYSICS

Annotation. *This article describes the advantages of the credit-module system, its convenience for students, and its role in the development of the education system. It also highlights what students should pay more attention to in the credit-module system, the methodological foundations of the credit-module system, and methods for achieving educational effectiveness by using innovative technologies in teaching physics.*

Keywords: *Credit-module system, physics, innovation, technology.*

МЕТОДОЛОГИЧЕСКИЕ ОСНОВЫ ИСПОЛЬЗОВАНИЯ КРЕДИТНО-МОДУЛЬНОЙ СИСТЕМЫ В ОБУЧЕНИИ ФИЗИКЕ

Аннотация*. В этой статье описываются преимущества кредитно-модульной системы, ее удобство для студентов и ее роль в развитии системы образования. В нем также освещается, на что учащимся следует обратить больше внимания в кредитно-модульной системе, методологические основы кредитно-модульной системы и методы достижения эффективности обучения за счет использования инноватsионных технологий в преподавании физики.*

Ключевые слова*: Кредитно-модульная система, физика, инноватsiu, технология.*

It is well known that physics is one of the sciences that plays an important role in the development of nations. The methodological foundations of the credit-module system in the development of the physics education system, the revolution in science, technology, and information have transformed human and their scientific and educational potential into a decisive factor in socio-economic progress. Therefore, our society always needs highly experienced teachers who have a deep knowledge of their subject. [2]It is well known that on December 24, 2021, two historic resolutions were signed by the head of our state regarding granting financial, academic, and organizational-managerial independence to higher education institutions, which will lead to fundamental positive changes in the higher education system. This gave impetus to the faster implementation of the credit-module system in higher education institutions.

The credit-module system is a system for organizing the process of mastering an educational program based on the formation of the content of each educational module (a module is a separate individual academic subject), monitoring the learning outcomes and final assessment of the module, and regularly evaluating the knowledge, skills, and competencies of students (3).

One of the main aspects of this education system is ensuring students' independent work and shaping their self-study skills. Secondly, it involves evaluating their acquired knowledge and skills based on a rating system.

A student's creative approach to their work is expressed in their ability to quickly grasp changes and innovations in society, study scientific advancements, and apply them in their activities. [1]

The transition to the credit-module teaching system also increases the obligations and demands on the faculty of higher education institutions. As mentioned above, with the modular teaching system, the teacher performs not only informational and controlling functions but also acts as a consultant and coordinator. The leading role of the teacher in the pedagogical process is maintained.

The credit system of education increases student mobility. It should be noted that any international experience cannot be blindly and directly applied in the educational process; each of its elements must be deeply analyzed and implemented based on scientific foundations.

The formation of students' scientific worldview requires attention to the development of a well-rounded individual. The credit-module system is widely used in higher education institutions to further develop the field of physics. An example of this is the current focus on engineering physics, the increased interest of students in physics due to the increase in independent study and laboratory work hours, and the

achievements in science Olympiads in recent years. When determining the proportion of compulsory and elective subjects in the curriculum, the requirements for the level of training of the specialist, the results achieved by the department in the field of science, the interrelation of subjects, and their derivation from international experience are taken into account.

All practical and laboratory additional subjects in the field of physics are carried out within the framework of the curriculum and are included in the total credits. It can be seen that the student's workload during the semester, which is the sum of classroom and independent study workloads, should be 30 credits. The credit-module system for the current academic year requires both faculty and students to create a personal learning trajectory and organize the educational process in the semester based on it. Thus, it follows that any educational process is based on the student's individual curriculum. Therefore, the pursuit of innovation and the continuation of efforts to fundamentally reform the higher education system is a completely correct decision. The role of innovative technologies in teaching physics in the credit-module system is high. As the outstanding representative of Uzbek classical literature, Zahiriddin Muhammad Bobur, said, "Knowledge is not built by itself; every person can acquire it only with great desire and strong enthusiasm," and it would not be an exaggeration to say that his scientific thoughts are proof of this. In the credit-module system, any lecture in physics should be high-level in theoretical content and understandable to everyone in form. [2]

The extent to which our youth possess comprehensive knowledge directly depends on the activities of us, the teachers, in correctly understanding and explaining the credit-module system. Increasing students' interest in physics can lay the foundation for the emergence of mature specialists in our country in the future and the advancement of science and technology. [3]

Another noteworthy aspect is that students define their trajectory for the semester through a personal curriculum. In this case, if a student chooses subjects closely related to their chosen field or subjects that are a logical continuation of a certain subject, they must have complete information about the foundational subject beforehand. For example, if a student studying physics wants to choose the “electrical” field, this student must have fully mastered the “mechanics and molecular physics” section.

In addition, a student studying in the field of physics education also has the right to choose teachers working in this field as their supervisor. In this case, students need to be provided with information about the teacher's achievements in physics, their academic degree, and the educational and regulatory documents published by the teacher in a certain area of physics.

What advantages does the transition to the credit-module system offer to students in the field of physics?

Firstly, academic mobility - students can easily transfer to any suitable higher education institution while retaining their credits. It is only necessary that the credits accumulated by the student are sufficient for the transfer.

Secondly, students are given the freedom to choose their teachers. Through this, academic communication between teacher and student is ensured.

Thirdly, students have the opportunity to choose subjects based on their interests. Of course, there are also compulsory (specialized) subjects, but students can independently choose elective subjects. This is a great opportunity for physics students, as the physics field will have more time and class hours for a deeper study of their specialization.

Fourthly, the possibility of independently forming the curriculum for students and ensuring the transparency of grades will be introduced. This inherently ensures transparency in the education system. Furthermore, the credit-module system has introduced the concept of academic independence to higher education institutions. Academic independence means that higher education institutions will now have to develop their curricula and academic plans based on labor market demands, employers' needs, and students' interests. This means that each higher education institution must develop its own curricula. Without transitioning to academic independence, the advantages of the credit-module system cannot be fully understood. However, this does not mean that higher education institutions can schedule classes as they wish; rather, as stipulated in the orders of the Ministry of Higher and Secondary Specialized Education, lectures should generally be conducted by professors and teachers with academic titles and degrees. We believe that it would be appropriate if our professors and teachers adhere to the above-mentioned points in the process of teaching physics. All the above-mentioned points allow us to conclude that the introduction of the credit-module system in physics fields will not only contribute to the development of this science but also enable students to work independently, feel at ease, and study on a transparent basis without any doubts about the education system. In addition, the credit-module system creates a great opportunity for the emergence of mature personnel who can meet the demands of the time and achieve great success in various fields of physics. The credit-module system positively affects the formation of indicators and assessment

tools for evaluating the competence of students and masters, and increases the effectiveness of preparing future teachers for professional activities (experience).

For each field of study, this system includes sets of control and evaluation tools and control and evaluation materials. These materials allow assessing the level of knowledge, skills, and acquired competencies. Each assessment material must ensure that it is possible to check the mastery of specific competencies and their constituent parts.

Practice shows that the teaching of students in the credit-module system, along with the use of advanced pedagogical technologies in teaching [II], has an effective impact on the quality of education. In conclusion, we emphasize that teaching in the credit-module system requires students to work hard on themselves, which in turn helps them to demonstrate their talents.

Conclusion. In conclusion, we must understand that the transition to the credit-module system in higher education institutions in our country is not just about distributing credits to students on an annual semester basis. The credit-module system requires new approaches in higher education institutions, from curricula to the organization of educational activities and ensuring transparency in the assessment system. If the credit-module system is implemented correctly and fully, it will give impetus to further enhance the higher education system in our country and produce mature personnel who can fully meet the demands of the time.

The currently being established credit-module system allows for the transfer of all academic subjects taught at the bachelor's and master's levels to this system. This process fosters skills such as solidarity, initiative, overcoming difficulties, and teamwork not only in students but also in professors and teachers. Organizing educational processes in the credit-module system, in addition to ensuring the transparency of educational activities in higher education institutions, increases the selectivity of education, the freedom to choose a personal learning trajectory, the ability to regularly monitor students' learning and achievements, and students' interest in studying. It encourages students and teachers to constantly study and research, work on themselves, and self-improve. If the credit-module system is implemented correctly and fully, it will give impetus to further enhance the higher education system in our country and produce mature personnel who can fully meet the demands of the time.

In the credit-module system, the existing data in today's scientific and methodological literature related to innovative educational technologies were studied and analyzed. "Pedagogical technology" was not considered as research in the field of technical teaching aids or the use of computers, but rather a brief description was given of the way to analyze factors that increase educational effectiveness and to identify the principles of the educational process and develop the most appropriate ways by structuring and applying materials, as well as evaluating the methods used.

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